

**Summary Report
Interim Meeting of the
Independent Review Panel on Appropriate Measurement
October 29-30, 2001**

OVERVIEW:

The Independent Review Panel on Appropriate Measurement met October 29-30, 2001, to continue its deliberations related to helping the CALFED Bay-Delta Program develop a definition of appropriate measurement for agricultural water use. The primary purpose of the meeting was to review the proposed framework and technical information developed by the Technical Team since the Panel last met in June 2001. Five of the six panelists met in caucus immediately following the public deliberations. This Report presents a summary of the outcome of both discussions.

The Panel's deliberations thus far have been intermediate in nature, focused primarily on process-related questions and technical issues. A final session – where the Panel will develop a set of findings and recommendations – is expected to take place in July 2002.

BACKGROUND:

The August 2000 Record of Decision calls on the CALFED Bay-Delta Program to: 1) convene a panel to provide guidance on formulating a definition of “appropriate” measurement of water use; and then, 2) work with the Legislature to help develop a bill that would require “appropriate” measurement of all water uses in California.

“An independent review panel on appropriate measurement will be convened. This panel will provide guidance that will help define appropriate measurement as it relates to surface and groundwater usage. The panel will prepare a consensus definition of appropriate measurement by the end of 2001. At the completion of this stakeholder/technical process, CALFED Agencies will work with the California State Legislature to develop legislation for introduction and enactment in the 2003 legislative session requiring the appropriate measurement of all water uses in the State of California.” (August 2000 CALFED Record of Decision)

The Independent Review Panel's deliberations are focused exclusively on agricultural water use. The Independent Review Panel's deliberations are expected to be completed by July 2002. All facets of the Panel design are discussed on an ongoing basis with an ad hoc group of interested agricultural, environmental, and agency representatives.

The results of the Panel's deliberations will be combined with comparable definitions of appropriate measurement for urban and managed wetlands – developed through a separate process – to prepare a comprehensive, draft definition that will be disseminated to and discussed with CALFED agencies, policymakers and interested members of the public. CALFED recognizes that the Legislature and Executive Branch retain sole responsibility for the enactment of statewide legislation. (A more detailed overview of the Panel background and process is included in the updated Terms of Reference included as **Attachment 1**.)

MEETING PURPOSE:

The primary aim of the Interim Meeting was to take stock of the technical work undertaken by Water Use Efficiency staff and consultants (referred to as the “Technical Team”) since the Panel last met in June 2001. Broadly, the focus of the Interim Meeting was to:

- Review and propose revisions to the Technical Team’s suggested framework for guiding the Panel’s deliberations on a definition of appropriate agricultural water measurement. This framework includes draft lists of purposes, critical considerations, measurement options and evaluation criteria.
- Review and propose revisions to the Technical Team’s suggested strategy for developing, evaluating and comparing the various measurement alternatives.
- Consider strategies for incorporating distinguishing water supplier/user characteristics – such as size, location, water costs and water supply reliability -- into the overall analytic framework.
- Identify additional data collection, research and other preparation needs necessary to inform the Panel’s final set of deliberations next year on a recommended definition of appropriate measurement for agricultural water use.

MEETING STRUCTURE:

The day-and-a-half-long session was structured to foster an open and informed dialogue among Panel members, Technical Advisors, interested stakeholders and CALFED staff and consultants.

Participation:

The Panel consists of six members selected based on their collective ability to provide an understanding of: measurement technology, resource economics, groundwater hydrology, technical water policy, water district operations and irrigation engineering. Based on these needs – and additional recruitment criteria outlined in the Terms of Reference – CALFED recruited the following panelists:

<u>Panelist</u>	<u>Affiliation</u>	<u>Expertise</u>
Naomi Duerr	Deputy Executive Director of Water Resource Management, South Florida Water Management District	Technical Water Policy Advisor
Thomas Harter	Professor, Department of Land, Air and Water Resources, UC Davis	Groundwater Hydrology
Steve Hatchett	Economist, Western Resource Economics	Resource Economics
Chris Kapheim	General Manager, Alta Irrigation District	Water District Operator
Jack Keller	Professor Emeritus of Agricultural and irrigation Engineering, Utah State; Founder and CEO, Keller-Bliesner Engineering	Irrigation Engineering
John Repogle	Research Hydraulic Engineer and Chief Scientist, U.S. Water Conservation Laboratory	Measurement Technology

The panelists were supported in their deliberations by eight Technical Advisors selected by the agricultural and environmental communities, as well as federal and state agencies. The Technical Advisors are:

<u>Agriculture</u>	<u>Environmental</u>	<u>Agency</u>
Lloyd Fryer (Kern Co. Water Agency)	Dana Haasz (Pacific Institute)	Luana Kiger (DWR)
Roger Reynolds (Summers Engineering)	Spreck Rosecrans (Environmental Defense)	Tracy Slavin (USBR)
Marc Van Camp (MBK)	Larry Farwell (Consultant)	

Finally, the Interim Meeting was facilitated by Tom Gohring, Program Manager for CALFED's Water Use Efficiency Program, and Scott McCreary and Bennett Brooks of CONCUR, Inc. A group of technical consultants completed CALFED's Technical Team in the substantive areas of engineering, law and economics. Team members participating in the meeting included Lee Axelrad, Scott Feistel, David Mitchell, Mark Roberson, David Purkey and Bryan Thoreson. (Detailed biographies of panelists, Technical Advisors and all Core Team members are included as **Attachment 2.**)

Meeting Structure Overview:

The Interim Meeting began with a welcome, introduction of the Panelists, and a brief review of the meeting agenda and procedures. This was followed by several background briefings: a summary of the CALFED Bay-Delta Program and its Water Use Efficiency (WUE) Element; an overview of the Panel purpose and suggested approach; and a brief description of the information gathered by the Technical Team since the Panel's June deliberations. (Summaries of the interim materials developed by the Technical Team are available at: www.calfed.water.ca.gov/programs/wue/WUEPublicMeeting.html)

The main portion of the agenda was structured to review a series of five broad topics proposed by CALFED to serve as the focus for the Panel's deliberations.

- Topic One:** ***Framework:*** Review and propose revisions to the suggested conceptual framework developed by the Technical Team. This framework includes draft lists of purposes, critical considerations, measurement options and evaluation criteria.
- Topic Two:** ***Alternatives Development:*** Review and propose revisions to the suggested measurement alternatives analysis developed by the Technical Team. This question includes a discussion of draft low, medium and high-intensity measurement packages.
- Topic Three:** ***Analysis Prototype:*** Review and propose revisions to the suggested strategy – including economics analysis – for evaluating and comparing the various measurement alternatives.
- Topic Four:** ***Distinguishing Characteristics:*** Consider strategies to account for distinguishing local characteristics – supplier size, cost and availability of water, etc. – when crafting a definition of appropriate measurement.
- Topic Five:** ***Additional Preparation Needs:*** Identify additional preparations (data collection, research, etc.) needed to support the Panel's continued deliberations on this topic.

The review of each question began with a brief presentation by Technical Team members to set the appropriate context. Panelists then followed with questions and comments. Next, Technical Advisors were asked to offer their perspectives. Remarks from the public constituted the final level of review, followed by a synthesis of the comments by the facilitation team.

Five of the six panelists also opted to meet in caucus following the Panel session to consider a number of the issues raised during the deliberations. A memorandum synthesizing that discussion is included as **Attachment 3**.

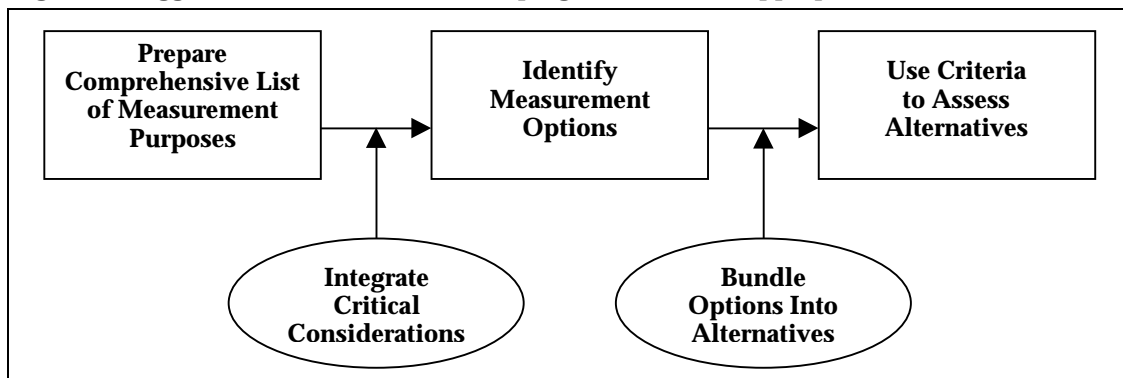
A copy of the full agenda and questions is included as **Attachment 4**. All other materials developed in support of the Interim Meeting are available on the web at: www.calfed.water.ca.gov/programs/wue/WUEPublicMeeting.html.

OUTCOME OF INTERIM MEETING:

During its public deliberations – and in a brief caucus immediately following the meeting – the Panel considered the Technical Team’s proposed conceptual framework for considering a definition of appropriate measurement.

Most broadly, the Panel endorsed the general framework suggested by the Technical Team – an objective-driven approach rooted in identifying agricultural water measurement strategies needed to achieve specific purposes. (See **Figure 1** below.)

Figure 1: Suggested Framework for Developing Definition of Appropriate Measurement



Panelists and others participating in the Interim Meeting did, however, have numerous suggestions for reshaping the approach. The ideas – presented below in three categories (Key Themes, Other Comments and Information Needs) – offer important guidance to the Technical Team as it continues its efforts to develop information to support the Panel’s deliberations on this topic.

Key Themes:

Discussions during the Interim Meeting – and in the follow-on Panel caucus – generated a number of key themes important to address as the planning and deliberations move forward. They include:

- **Sharpen Panel Mission.** Panelists and other participants suggested several specific strategies for more crisply defining the connection between the Panel’s deliberations and any eventual definition of appropriate measurement. The recommendations – all focused on sharpening and shaping the parameters of the Panel’s discussions – included the following:
 - ***Articulate clearer linkage between the need for agricultural water measurement and CALFED Bay Delta Program or statewide needs.*** Several panelists suggested that potential approaches to agricultural water measurement be evaluated in part as to whether they would provide information that contributes to: 1) attainment of overarching CALFED goals related to ecosystem health, water supply reliability and water quality; and,

2) implementation of the Water Use Efficiency Program's Quantifiable Objectives and other actions.

- **Specify time horizon.** Panelists discussed the need to clarify the timeframe associated with its deliberations. Is the Panel trying to develop a definition of appropriate agricultural water measurement to address California's immediate needs? Or, conversely, is the Panel tasked with putting forward a definition to address longer-term needs? This issue also reverberated through discussions related to the possible need for a baseline assessment of the state's current approach to measurement. Should the panel be trying to answer the question, "What is broken today that needs to be fixed," or is it, instead, trying to put forward a vision that says, "What moves us towards our longer-term goals?"
- **Clarify Post-Panel Process.** Several panelists sought a better understanding of the post-Panel process, specifically seeking clarification on: 1) what is the desired look and feel of the Panel's final product and how will it be used; and, 2) how will measurement needs related to urban and managed wetlands be folded into a more comprehensive definition of appropriate measurement.

The Panel attempted to address the issues discussed above by crafting a draft mission statement at the end of the second day's deliberations. The statement – updated slightly to incorporate the Panel's follow-on conversations during its post-meeting caucus and to be consistent with the ROD commitment – reads as follows:

Mission Statement of the Agricultural Water Measurement Panel

California's water supply and water-related ecosystems (including the Bay-Delta) are in distress after decades of competing demands. Several species are in decline or endangered and water supplies are increasingly unreliable, jeopardizing the world's sixth-largest economy and 5 million acres of highly productive agricultural lands.

The appropriate measurement of agricultural water use can contribute to solutions to California's water problems. The purpose of the Agricultural Water Use Measurement Panel and associated stakeholder outreach is to define appropriate measurement of agricultural water use for California. This definition should support the broader long-term needs for ecosystem restoration and water supply reliability in California as articulated by the CALFED Bay-Delta Program and other sources.

In developing the definition of appropriate water use measurement, the Panel will direct the collection of technical information on agricultural water measurement and identify issues that need to be addressed.

The Panel, informed by the work of the Technical Team and stakeholder comments, will recommend a definition that recognizes regional variation, anticipates future conditions, and addresses the following water management purposes:

- Water transfers
- State/federal water allocation
- State/federal water planning

The Panel will produce a final report, which will include its findings and any recommendations to the CALFED Bay-Delta Program.

- **Narrow Scope of Panel Deliberations.** Panelists' most significant comments centered on the scope of the Panel's deliberations. In their discussions, panelists called on the Technical Team to narrow the scope in two important ways: 1) by narrowing the list of purposes to be addressed by any possible agricultural water measurement legislation; and, 2) by cutting the number of alternatives to be considered by the Panel.
 - ***Purposes.*** The draft proposed framework prepared by the Technical Team identified and aggregated the range of purposes for agricultural water measurement into six categories: 1) farm water management and planning; 2) supplier water planning; 3) supplier water management and allocation; 4) state/federal water planning; 5) state/federal water management and allocation; and, 6) water conservation and transfer. As indicated in the draft mission statement above, the Panel strongly recommended that its deliberations focus only on purposes for agricultural water use measurement that are principally aimed at helping government carry out its various roles, not purposes principally aimed at improving private internal decisions by individual growers and districts. Governmental purposes include: water transfers; state/federal water allocation; and, state/federal water planning. At the same time, panelists did recommend that the Technical Team identify the private benefits likely to result from any governmentally driven measurement criteria.
 - ***Alternatives.*** In the materials developed in advance of the Interim Meeting, the Technical Team presented three draft alternatives (low, medium and high intensity) for each of the six purposes outlined above. Panelists strongly suggested that, for the Panel's final deliberations, the Technical Team put forward a well-documented strawman for its deliberations that:
 - Offers no more than two alternatives for each purpose,
 - Is supported by the necessary data; and,
 - Identifies clear options and expected outcomes.
- **Reshape Groundwater Options.** Panelists suggested that the different options suggested for measuring groundwater – at the regional level or at the wellhead; using water balances, aquifer characteristics, power records or flow meters – could be reframed to articulate a more realistic and appropriate range of possibilities associated with state/federal planning and allocation and water transfers. They further suggested that the existing regulatory structure of local groundwater management might be a useful model for implementing agricultural groundwater measurement needs. Panel member Thomas Harter agreed to work with Technical Team members to draft revised options. Panelists voiced other comments and suggestions related to groundwater. They included:
 - Reframe options to articulate desired accuracy levels (i.e., plus/minus 10% accuracy), rather than stipulating measurement methods and/or technologies.

- Conduct additional research to better understand: 1) the extent to which farmers use diesel- versus natural gas-driven wells ; and, 2) the respective capacity of these wells to be accurately identified in terms of pumping rates.
- Recognize that on -farm measurement and particularly private well pumping measurement remains an extremely important and sensitive subject with most farmers.
- **Evaluate, Not Screen, Options.** Panelists strongly suggested that the Technical Team evaluate – not screen – the final options developed for the Panel’s consideration during its final session. The recommended change is intended to emphasize the analysis, rather than the elimination, of any of the alternative measurement strategies. Other suggestions for structuring and strengthening the analysis included:
 - Group the evaluation into three primary categories: technical, economic and social/political.
 - Consider applying differing weights to the various evaluation criteria.

Although the exact look and feel of the evaluation criteria is still to be determined, panelist Steve Hatchett offered the following broad recommendation: Structure the evaluation to answer the following three questions: 1) Does the option help meet the Water Use Efficiency Program’s Quantifiable Objectives; 2) Does the option help meet broader CALFED Bay-Delta Program goals; and, 3) Does the option help meet other statewide goals?

- **Expand Efforts to Engage Public Involvement.** Several panelists recommended that the WUE Program take additional steps to ensure that affected communities are aware of and involved in future Panel discussions. Specific suggestions included:
 - Meet with stakeholder groups in advance of the next session to make sure they are aware of the effort and understand the opportunities to comment on the process and possible outcomes.
 - Distribute draft materials well in advance of the Panel’s final set of deliberations.
 - Consider holding a set of formal and informal meetings, with or without the Panel, in the Central Valley to discuss the Technical Team’s analysis and alternatives.

Panelists also suggested that the final session be structured to include opportunities for the Panel to caucus privately and then report back to the public.

Other Comments:

Panelists and other participants in the meeting offered a range of additional suggestions and comments related to the materials presented and discussed during the Interim Meeting. These comments, summarized below, do not necessarily reflect a consensus view but rather are intended to provide additional concepts for the Technical Team to consider as it refines the material to be presented to the Panel at its final set of deliberations.

- Expand the study of accuracy to include that which is being achieved in the field and not what is just "theoretically" possible.
- Consider the need to articulate a definition of appropriate measurement as it relates to state and federal agencies' to gauging flows and water quality on major waterways.
- Simplify language throughout the framework. Eliminate labeling that can be confusing (i.e., the use of "A", "B" and "C" for characterizing different measurement intensities in the draft matrix).
- Consider different methods of measuring evapotranspiration, as it relates to transfers; panelist Steve Hatchett agreed to forward suggestions to the Technical Team.
- Reconsider the need for options other than low-intensity measurement to address state/federal water planning needs.
- Make clear at what level (farm turnout or water-right holder) measurement is being deliberated.
- Consider quality control and dissemination issues related to options that generate significant amounts of new information.
- Consider structures for legislation that would be of general applicability on the state level and allow for implementation at the local level by local agencies. Several panelists cited the AB3030 process as a possible model.

Information Needs:

Panelists generally endorsed the technical approach being undertaken in support of the Panel's deliberations and encouraged the Technical Team to complete its analyses. At the same time, panelists recommended that the current effort be supplemented with the following efforts:

- **Additional stakeholder surveys.** Panelists recommended that the Technical Team broaden its stakeholder surveys to interview agency staff, other CALFED program managers and past water-transfer participants. The additional interviews were seen by panelists as a way to flesh out the purposes of measurement and paint a rough picture of the state's current baseline and future needs. Panelists also recommended that – in the final report – stakeholder surveys with growers, water suppliers and environmental representatives be organized both by cross-cutting themes and interest group categories.
- **Current baseline of on-farm measurement.** T. Gohring suggested that he and other Technical Team members work with the Bureau of Reclamation to develop a rough outline of the current state of on-farm measurement.
- **Reformat and supplement information on California's current approach.** Panelists asked that the overview of California's current approach be formatted in a tabular format similar to the information gathered for other states. Such a reformatting, panelists said, will make it easier to compare California's current situation with other state's experiences and approaches.

NEXT STEPS:

As a result of the Panel's deliberations, the Technical Team has refined a series of steps to guide the overall process related to appropriate measurement. These steps – summarized briefly below and included in greater detail as **Attachment 5** – are intended to foster a discussion that is informed by relevant technical work and meaningful stakeholder involvement. The primary steps break into two categories: those related to agricultural water measurement only and those related to measurement of all water uses.

Next Steps Related to Agricultural Water Measurement Only:

- **Refine and Execute Work Plan.** Based on the specific information needs identified and general themes raised during the Panel's Interim Meeting, the Technical Team will be undertaking a series of tasks in advance of the Panel's next and likely final set of deliberations. The general tasks, to be discussed with the Panel, include:
 - Revising elements of the overarching analytic framework based on the specific suggestions and general guidance provided during the Interim Meeting. This will include reframing purposes, measurement intensity definitions, packages of measurement alternatives and evaluation criteria.
 - Conducting interviews with appropriate CALFED agency representatives, other CALFED program managers and water transfer participants (including potentially impacted third parties) to better understand the types and uses of measurement information currently collected to support state/federal actions related to planning, allocation and transfers.
 - Preparing draft findings that outline the broad characteristics of California's existing condition related to: current ag water measurement laws/regulations and implementation status; current ag water measurement practices (including on-farm measurement activities); and, current gaps in addressing purposes related to state/federal planning and allocation and transfers.
 - Developing and evaluating various purpose-driven ag water measurement approaches and putting forward a "strawman" approach based on technical, economic, legal and social/political considerations.
- **Discuss Interim Work Products with Panel and Interested Stakeholders.** Panelists and interested stakeholders will have an opportunity to review and comment on draft materials prepared in advance of the final Panel session. The intent of these reviews – both through ad-hoc work groups and structured public workshops – will be to present and solicit feedback on key materials developed by the Technical Team.

- **Convene Final Panel Deliberations.** CALFED expects to convene the final Panel session in July 2002. To ensure the Panel's deliberations are as productive as possible, WUE staff intends to: 1) distribute meeting materials, including a strawman definition of appropriate measurement as it relates to agricultural water use, several weeks in advance of the session; and, 2) meet with interested stakeholder groups in advance of the Panel's deliberations to encourage attendance at the session, address any questions regarding the overall process and provide meeting materials.
- **Solicit Stakeholder Comment on Final Panel Report.** With the Panel's guidance, WUE staff and consultants will prepare a Final Panel Report summarizing the Panel's deliberations and recommendations. This report will be distributed to both affected stakeholder communities and CALFED agencies for their review and comment.

Next Steps Related to Measurement of All Water Uses:

Following the Panel's July 2002 deliberations and release of a Panel Final Report, the CALFED Program anticipates the following broad next steps:

- **Develop Comprehensive Definition of Appropriate Measurement for All Water Uses.** WUE staff will prepare and disseminate a draft definition of appropriate measurement that encompasses agriculture, urban and managed wetlands. The approaches related to urban and managed wetlands will have been developed through a yet-to-be-defined process.
- **Solicit Stakeholder/CALFED Agency Comment on Draft Definition.** Staff will meet with CALFED agencies to discuss and seek comment on the Panel's proposed draft definition of appropriate measurement. WUE staff also will conduct a series of public workshops throughout the state to solicit feedback on and suggested revisions to its draft definition.
- **Determine Legislative Linkages.** CALFED Policy Group will determine the efficacy of and strategy for working with the executive and/or legislative representatives to draft and introduce state legislation.

For further information regarding this Interim Meeting or the Independent Review Panel initiative, please contact Tom Gohring with the CALFED Bay-Delta Program at 916-651-7102.

ATTACHMENTS:

- Attachment 1: Updated Terms of Reference
- Attachment 2: Biographies
- Attachment 3: Panel Memorandum
- Attachment 4: Agenda
- Attachment 5: Process Overview and Associated Timeline

ATTACHMENT 1

UPDATED TERMS OF REFERENCE

(Terms of Reference updated to reflect changes discussed during and following the June 15, 2001, Panel Scoping Session and the October 29-30, 2001, Panel Interim Meeting.)

PURPOSE:

The CALFED Bay-Delta Program has convened an Independent Review Panel to assist in defining appropriate measurement as it relates to agricultural water use efficiency.

BACKGROUND:

The CALFED Bay-Delta Program is a cooperative effort among state and federal agencies and the public to ensure a healthy ecosystem, reliable water supplies, good quality water, and stable levees in California's Bay-Delta system. The Water Use Efficiency Program is one of several Program elements CALFED is implementing through an integrated approach.

In its August 2000 Record of Decision, CALFED committed to accomplishing the following task as part of its Stage 1 Actions associated with the Water Use Efficiency Program:

“An independent review panel on appropriate measurement will be convened. This panel will provide guidance that will help define appropriate measurement as it relates to surface and groundwater usage. The panel will prepare a consensus definition of appropriate measurement by the end of 2001.”

CALFED believes the Independent Review Panel on Appropriate Measurement can play an important role in framing issues as they relate to agricultural water use. The Panel's deliverable will be a consensus definition of appropriate agricultural water measurement. This definition is expected to provide a flexible framework – not a one-size-fits-all prescription.

A separate process will be used to address urban and managed wetlands water use. The results of both processes will be folded into a comprehensive set of recommendations.

The outcome of the Panel's deliberations will be used as a foundation for the following additional ROD task: “CALFED Agencies will work with the California State Legislature to develop legislation for introduction and enactment in the 2003 legislative session requiring the appropriate measurement of all water uses in the State of California.” CALFED recognizes that its work is advisory only; the Legislature and the Executive Branch retain sole responsibility for the enactment of statewide legislation.

OBJECTIVES:

As noted above, the Panel – a cross-disciplinary mix of independent experts – is to provide guidance that will help define appropriate measurement as it relates to agricultural surface and groundwater usage. In carrying out its work, the Panel will likely focus on the following questions: 1) what are the potential benefits and costs of measurement to water users, suppliers and the broader public; 2) how do the potential benefits and costs vary with conditions and what are the prevailing drivers; and, 3) what are the barriers – technical, economic, institutional or political – to measurement. The specific questions to be engaged are being framed by the panelists themselves, in discussion with CALFED staff and stakeholders.

This initiative – launched in the spring of 2001 and slated to be completed in 2002 – is guided by several key principles:

- **Objective-driven effort.** A critical underpinning of the Agricultural Water Use Efficiency (WUE) Program is to link water management practices to objectives. This same approach is being applied to discussions regarding appropriate measurement. The Panel's deliberations will be structured to first explore the objectives of measurement (both surface and groundwater) and then develop a definition that is consistent with the identified objectives. The discussion also will be shaped to link the Panel's deliberations on appropriate measurement to the WUE Program's overall goal of achieving regional and/or statewide Targeted Benefits (objectives) related to timing and flows, quality and quantity.
- **Open process with stakeholder involvement.** CALFED's Record of Decision acknowledges the value of and calls for stakeholder involvement. To facilitate this involvement, the Panel's deliberations will be structured to allow for and encourage stakeholder input. As was done with the December 1998 Independent Review Panel on Agricultural Water Conservation Potential, stakeholders will be invited to nominate technical advisors to participate in the discussions. As well, the Panel's deliberations will be conducted in public. Finally, CALFED-convened, stakeholder groups representing diverse agricultural, environmental and agency interests are to serve as a sounding board regarding Panel design, panelists selection and outcomes.
- **Outcome-focused.** It is CALFED's intention to use the Panel process to elicit concrete recommendations regarding the definition of appropriate measurement in the context of drafting legislation. These recommendations will be included in a report that summarizes the Panel's findings and deliberations and suggests critical elements and concepts to incorporate into a legislative proposal. This guidance will then be used by CALFED staff, in consultation with stakeholders, the legislature and others, to inform the drafting of proposed legislation related to appropriate measurement.
- **Legitimacy, accountability, neutrality.** To ensure the process is credible and results in advice useful to CALFED and accepted by stakeholders, it is essential that the Panel's work be structured in a manner that fosters legitimacy, accountability and neutrality. Accordingly, the Panel process outlined below incorporates a handful of

key elements – meaningful stakeholder involvement, joint scoping of questions to be addressed, criteria to guide panelist and technical advisor selection, and deliberations in public – that are intended to facilitate such an atmosphere.

APPROACH:

Participants:

Panel Members. The Program has recruited nationally recognized technical experts who collectively can provide understanding of the following areas:

- Measurement technology/hardware. This panelist is to bring an understanding of existing and emerging measurement technologies and hardware. He/she should also be familiar with the technological limitations.
- Resource economics. This panelist is to bring expertise related to the costs and benefits associated with measurement. He/she should also be familiar with issues related to financing measurement improvements.
- Groundwater hydrology. This panelist is to bring an understanding of the purposes, benefits, limitations and costs associated with groundwater measurement. Ideally, he/she would have experience working in and out of adjudicated basins.
- Technical water policy advisor. This panelist is to bring an in-depth understanding of how the integration and interpretation of large data sets can be used to inform public-sector policy making. This includes understanding: 1) what's required to collect and use data, and, 2) what are the relative costs and benefits of maintaining centralized data.
- Water district operator. This panelist will contribute an on-the-ground perspective of a water district operator intimately familiar with agricultural irrigation in California
- Senior integrator/irrigation engineering. This panelist is to contribute expertise related to irrigation engineering. As well, this panelist will bring practical experience in recommending measurement programs for water agencies.

Additionally, the following criteria have been applied across all panelists: 1) technical capability to cover the required disciplines; 2) objectivity, as reflected in the perceived willingness/ ability to integrate diverse viewpoints; 3) ability to work collaboratively; 4) understanding of the various objectives related to measurement; 5) practical experience with on-the-ground use of measurement; 6) competent and comfortable with analysis, storage, dissemination and use of measurement data; and, 7) availability.

A list of the panelists, along with their expertise and affiliation, is provided in the chart on the following page.

Panelist	Affiliation	Expertise
Naomi Smith Duerr	Deputy Executive Director of Water Resources Management, South Florida Water Management District	Technical Water Policy Advisor
Thomas Harter	Professor, Department of Land, Air and Water Resources, University of California, Davis	Groundwater Hydrology
Steve Hatchett	Economist, Western Resource Economics	Resource Economics
Chris Kapheim	General Manager, Alta Irrigation District	Water District Operator
Jack Keller	Professor Emeritus of Agricultural and Irrigation Engineering, Utah State; Founder and Chief Executive Officer, Keller-Bliesner Engineering	Irrigation Engineering
John Replogle	Research Hydraulic Engineer and Chief Scientist, U.S. Water Conservation Laboratory	Measurement Technology

Technical Advisors: Stakeholders have been encouraged to name technical representatives to provide additional information to the Independent Review Panel. Stakeholders have been asked to select representatives who: 1) have expertise in relevant areas; 2) have strong communication skills; and 3) are willing to disclose their various affiliations. Between the scoping and full panel deliberations, technical advisors may also be asked to help CALFED better understand local issues and information sources. Each major stakeholder group – agricultural, environmental and agency – will be asked to name three technical representatives. Finally, CALFED staff and consultants will be on hand to provide additional expertise, as needed.

Public Participation: A broad range of stakeholders and other interested parties will be invited by CALFED to observe the deliberations of the Independent Review Panel. The public will be given periodic opportunities to address the panel.

Process:

The Panel process, begun in the spring of 2001, is expected to end in 2002. The process – modeled after CALFED’s 1998 Agricultural Water Conservation Potential Panel – encompasses six primary steps: 1) gathering background information; 2) convening Scoping Session; 3) executing Scope of Work; 4) convening Interim Panel; 5) conducting additional technical work and stakeholder outreach; and, 6) convening Final Panel. Each of these steps is further detailed below.

Step One: Information Gathering and Pre-Panel Briefing. CALFED staff and consultants review the existing literature to develop initial background materials related to the following topics:

- Descriptions of prevailing usage, emphasizing types of measurement, geographical distribution and factors driving usage (costs and benefits).
- Available measurement technologies, including both current and emerging options.
- Discussion of linkage between water management objectives, flow path management and flow path quantification within the context of a standard water balance structure.
- An overview of the legal landscape related to measurement, highlighting relevant state statutes and characterizing the range of, trends in and rationales for legal approaches at the local/regional level.

These materials help both CALFED staff and panelists frame the topics to be engaged at the Scoping Session and in subsequent work undertaken by consultants and in future Panel deliberations.

Step Two: Conduct Scoping Session. Panelists, technical advisors and CALFED staff and consultants participate in a Scoping Session, where participants: 1) review and distill key lessons from background information distributed prior to the session; 2) frame specific questions to be engaged by the Panel at a later date; 3) identify information needed to inform the Panel's future deliberations on appropriate measurement; 4) identify other preparatory needs; 5) develop a work plan needed to inform subsequent panel discussions; and, 6) describe capabilities required to execute the proposed work plan.

Step Three: Execute Scope of Work. Based on the Panel's deliberations at the Scoping Session, CALFED develops a scope of work necessary to inform subsequent Panel deliberations. The scope of work includes, among other tasks, a survey that gathers information statewide related to: objectives of measurement; variations in approach to and objectives of measurement by region; and types and extent of measurement already being used. CALFED relies on outside consultants to execute the proposed scope of work, which are then disseminated to Panel members, technical advisors and interested stakeholders.

Step Four: Convene Interim Panel. CALFED convenes the Panel in a two-day, Interim Session to consider the technical work undertaken to-date and, as appropriate, review and revise the proposed framework for the Panel's later deliberations. Stakeholder technical representatives are invited to provide background information and to observe the deliberations. Members of the public also are invited to attend.

Step Five: Conduct Additional Technical Work. Based on the Panel's deliberations at the Interim Session, CALFED conducts additional technical work necessary to inform subsequent Panel deliberations.

Step Six: Convene Panel. Using the information generated through the scope of work, the Independent Review Panel strives to meet its objectives through deliberations during a public multi-day session. Stakeholder technical representatives are invited to provide background information and to observe the deliberations. Members of the public also are invited to attend. The Panel may opt to caucus for a portion of the deliberations in order to digest and synthesize their findings before reporting back. At the end of the session (or subsequent sessions, if necessary), the Panel produces a report that offers a draft definition of the elements of agricultural water use appropriate measurement. A consensus opinion is preferred; panelists are provided the opportunity to submit minority opinions.

Following the Panel's deliberations, CALFED will develop a draft definition of agricultural water use that will then be disseminated to and discussed with CALFED agencies, policymakers and interested members of the public. This draft definition will be combined with comparable urban- and managed wetlands-related language to ensure CALFED is putting forward a comprehensive recommendation. CALFED envisions holding multiple workshops throughout the state to ensure broad public review and input. CALFED's recommendations will then be forwarded to the Legislature and the Executive Branch, who retain sole responsibility for the enactment of statewide legislation.

Deliverable

The Independent Review Panel's primary deliverable will be a final written report, which is to include: a draft definition of the elements of appropriate agricultural water measurement; potential elements to incorporate into a possible legislative proposal; and supporting materials. This definition will assist CALFED in working with the Legislature to draft comprehensive legislation on appropriate measurement.

It is anticipated that this definition will provide a framework for determining the most appropriate measurement for given situations. It is not expected to dictate a one-size-fits-all prescription for measurement.

ATTACHMENT 2

SECTION I: General Meeting Materials

**INTERIM MEETING
INDEPENDENT REVIEW PANEL ON
APPROPRIATE MEASUREMENT
West Ballroom, Sterling Hotel, Sacramento
October 29-30, 2001**

PANELIST BIOGRAPHIES

NAOMI DUERR is currently Deputy Executive Director for the South Florida Water Management District (SFWMD), a \$524-million agency responsible for flood control, environmental restoration, water allocation, and protection of natural systems in a 16-county area covering 10 million people. Ms. Duerr received her BS in Geology and her Masters of Public Administration and Policy (MPA) with a specialty in water policy, both from the University of Nevada - Reno. She is a Certified Professional Geologist.

Ms. Duerr's areas of responsibility with SFWMD include water supply planning, water conservation, watershed management, environmental regulation, construction and engineering. She is currently leading the district's effort to establish minimum flows and levels for the Everglades and other water bodies, and has recently been tasked with heading up the effort to manage the drought in south Florida. Her staff are involved in projects to restore Kissimmee River Basin, Lake Okeechobee and the Everglades, as well as the construction of 200 aquifer storage and recovery wells.

From 1993 to 2000, Ms. Duerr was the State Water Planner and head of the Division of Water Planning in Nevada, the driest state in the nation. There she led a team of scientists and planners in developing the state drought plan, state water conservation plan, and regional watershed plans, and initiated the state natural resource plan and state floodplain management program. The Nevada State Water Plan, developed under her direction, was selected as the *Most Notable Document of the Year 2000* by the National Conference of State Legislators. As State Water Planner, Ms. Duerr was also responsible for implementing data analysis and water education programs, and a \$50 million program of grants for water conservation and construction of water systems. Prior to joining the state of Nevada, Ms. Duerr was the Deputy Director of the Regulation Department at the St. Johns River Water Management District in Florida, where she led the effort to develop new water conservation and water measurement rules. Professional honors include: *Florida Regulatory Person of the Year* by the Florida Rural Water Association, and recipient of the *Golden Pinecone Award*, Nevada's most significant environmental achievement award.

THOMAS HARTER is currently Associate Cooperative Extension Specialist in Subsurface Hydrology and a faculty member of the Department of Land, Air, and Water Resources at UC Davis. He received his Ph.D. in Hydrology from the University of Arizona, where he also was a Fulbright Scholar and Harshbarger Fellow. He earned his M.S. in Physical Geography/Hydrology from the Universities of Freiburg and Stuttgart, Germany.

Dr. Harter is conducting research on deep vadose zone characterization and groundwater resources assessment through groundwater flow and contaminant transport modeling. He is serving as principal investigator for developing a regional groundwater and surface water model of a 1,500-square-mile watershed in the San Joaquin Valley, a risk analysis of production aquifer salinization in the Western San Joaquin Valley, and an assessment of groundwater quality impacts from animal farming operations. As a technical reviewer for the state of Arizona, he has advised on project design and research implementation involving groundwater development projects. Dr. Harter has also taught numerous courses on topics including Groundwater Flow and Transport Modeling, Vadose Zone Modeling, and Applied Groundwater Hydrology.

Dr. Harter is a member of the American Geophysical Union, the European Geophysical Society, the International Association of Hydrologic Sciences, the National Ground Water Association, and the Groundwater Resources Association of California. He has contributed articles to numerous publications and conferences including "Environmental Science and Technology," "Journal of Hydrology," and "Water Resources Research."

STEVE HATCHETT is an economist specializing in agriculture, water resources, and mathematical and statistical analysis. He received his Ph.D. in Agricultural Economics from the University of California at Davis in 1984. Dr. Hatchett is owner of Western Resource Economics, a private consulting firm specializing in agriculture and water resources in the western U.S. Prior to opening his private practice in early 1999, Dr. Hatchett served as economist and project manager in the Sacramento office of CH2MHILL for more than 11 years.

Dr. Hatchett has led the economic analysis for numerous projects related to agricultural water use. Clients include the Bureau of Reclamation (Mid-Pacific and Pacific Northwest Regions), CALFED, California Dept. of Water Resources, and many local agencies. Dr. Hatchett is a recognized expert in the economics of irrigated agriculture. Among his activities, he has:

- Developed a comprehensive database of agricultural land use, water use, production, prices, and costs for the Central Valley of California;
- Evaluated the trade-offs between on-farm irrigation costs, water use, and management for major Central Valley crops;
- Evaluated the effects of changes in water supply and pricing on irrigation water use in California;
- Assisted CALFED in quantifying agricultural water conservation targets and developing guidelines to evaluate water conservation proposals.

Dr. Hatchett has prepared numerous project reports, articles in professional journals, and presentations to professional conferences.

CHRIS KAPHEIM is General Manager of Alta Irrigation District, a San Joaquin Valley water supplier encompassing 130,000 acres in Tulare, Fresno and Kings Counties. There are approximately 4000 farmers that may utilize surface water within the district. Mr. Kapheim received his B.S. in Soil Science from California Polytechnic State University, S.L.O. Mr. Kapheim is also a graduate of Class XXVI of the California Agricultural Leadership Program.

Mr. Kapheim has been a member of the Tulare County Planning Commission since 1987, and has been recognized for his efforts to conserve agricultural land in association with planned growth and development by being named “California Planning Commissioner of the Year” representing the central region of California. The Kapheim family has been farming in Dinuba, California, since 1907. Mr. Kapheim is the fourth generation to actively partake in the farming enterprise. Currently Kapheim farms grows grapes and plums.

Mr. Kapheim has been active in political issues serving as Chairperson of Governor Davis’ Central Valley Subcommittee on Air and Water, which resulted in two economic summits located in Fresno and Bakersfield. Currently Mr. Kapheim is co-founder and Chairperson of the Kings River Water Political Action Committee. Mr. Kapheim is also Co-Chairperson of the Kings River Legislative Committee. Mr. Kapheim is active on water conservation issues helping formulate and being a member of the Agricultural Water Management Council.

JACK KELLER is currently Professor Emeritus of Agricultural and Irrigation Engineering for the Biological and Irrigation Engineering Department at Utah State University, and founder and Chief Executive Officer of Keller-Bliesner Engineering. He received his Ph.D. in Irrigation Engineering from Utah State University, and his M.S. in Irrigation Engineering from Colorado State University.

During his tenure at the University, Dr. Keller has taught and carried out research in sprinkle and trickle irrigation, and served as Department Chairman from 1979 through 1985. While at the University he was the Co-Director (from 1978 through 1989) of the multi-disciplinary Water Management Synthesis Projects, funded by the U.S. Agency for International Development, to provide socio-technical assistance for transferring irrigation technologies worldwide. Before joining Utah State University in 1960, Dr. Keller was the Chief Irrigation Engineer for W.R. Ames Company, a leading manufacturer of irrigation equipment in the United States. Over the years, he has served as a consultant to the Ames Company, as well as several other irrigation system manufacturing companies.

Through his public and private activities, Dr. Keller has provided advisory services on irrigation matters in over 50 different countries in all regions of the world. He is recognized as an international expert in the field of irrigation technology transfer, irrigation and irrigated agricultural policy formulation, and the problems associated with improving irrigated agriculture in both developed and developing countries. He is currently serving as Senior Policy Advisor in Kansas, Egypt, Morocco and California, and as a Senior Integrator with CALFED’s Water Use Efficiency Program. He previously served as a panel member on the Independent Review Panel on Agricultural Water Conservation Potential. Dr. Keller is also serving as the Science Liaison Officer and Fellow for the international Water Management Institute, which is one of the CGIAR Centers. He is the author of 88 technical papers, 15 popular articles, 46 consulting reports, 5 handbooks, 2 textbooks, and 4 patents.

JOHN REPLOGLE is currently a Research Hydraulic Engineer and Chief Scientist at the U.S. Water Conservation Laboratory in Phoenix. He received his B.S and M.S. in Agricultural Engineering, and his Ph.D. in Civil Engineering, from the University of Illinois.

Dr. Replogle's past work has included leading research related to crop water management and on-farm irrigation system performance, irrigation delivery systems and their impacts on farm operations, and hardware and management techniques to improve delivery system capabilities to deliver water in response to on-farm crop water needs (on-demand). At the Water Conservation Laboratory, he serves as Lead Scientist and Research Hydraulic Engineer for developing control schemes, flow measurements methods related to irrigation management, and technology transfer methods related to irrigation. His work in canal flow measuring methods has led to frequent travels to irrigated areas of the world including Bangladesh, Pakistan, Nepal, and India. Clients for this work have included USAID, USDA, United Nations Development, Education Development Center, Inc., and Winrock International. He has authored or co-authored over 100 technical papers, including several books, book chapters and related articles on irrigation and irrigation system flow measurement, control, and management.

During the past decade Dr. Replogle has earned the Hancor Soil and Water Engineering Award, the Hydraulics Structures Medal, and the Royce J Tipton Award "...for a distinguished record of accomplishments in the field of irrigation and drainage engineering through research and service." He is a member of the American Society of Agricultural Engineers, the American Society of Civil Engineers, the International Commission on Irrigation and Drainage, and the American Association for the Advancement of Science.

AGENCY/STAKEHOLDER TECHNICAL ADVISOR BIOGRAPHIES

AGENCY

ARTURO CARVAJAL is a Water Management Specialist Engineer at the USDA/NRCS State Office in Davis, California. His responsibilities include developing a new approach to the NRCS's Irrigation Water Management (IWM) program in California. On behalf of USDA/NRCS, Carvajal is helping develop and implement CALFED's Water Use Efficiency Program; he participated as a reviewer of agricultural water conservation proposals within CALFED's WUE Incentive Program (PSP 2001). Carvajal is a member of the Agricultural Water Management Council's Education Committee. Previously, Carvajal worked as an Associate Land and Water Use Analyst for the Department of Water Resources in the Water Use Efficiency Office. Carvajal holds both a B.S. in Agricultural Engineering and Master of Science in Irrigation from UC Davis and has completed core courses in a graduate program in Water Resources Planning at the UC Davis Department of Civil Engineering.

LUANA KIGER is the Chief of the California Department of Water Resources' (DWR) Water Use Efficiency Office. She is serving on an interagency personnel agreement between DWR and the United States Department of Agriculture Natural Resources Conservation Service (NRCS). Both DWR and NRCS, together with U.S. Bureau of Reclamation, have been identified by CALFED as key partners in Stage 1 Implementation for the Water Use Efficiency Program. DWR and NRCS are expected to provide enhanced technical assistance for planning and implementing conservation measures through voluntary participation of local water districts, resource conservation districts, and producers. Kiger's leadership of the Water Use Efficiency Office at DWR is intended to further the goals for DWR, NRCS, and CALFED in developing a strong WUE program.

Prior to her work at DWR, Kiger served for five years as NRCS State Conservationist in Idaho, and has twenty years experience in resource conservation issues in California and the West. Kiger has a B.S. degree in Agronomy from California State University at Chico and a Master's in Public Policy from California State University Hayward.

TRACY SLAVIN currently serves as team leader of the U.S. Bureau of Reclamation Mid-Pacific Region Water Conservation Program. Prior to joining the Bureau of Reclamation, he worked for Westlands Water District where he served as Water Conservation Specialist, and later as the district's Water Conservation Coordinator. He has extensive experience preparing water conservation plans, and providing technical assistance in water management to farmers. Slavin has an M.S. in Agriculture from CalPoly in San Luis Obispo. He has served on the AB 3616 Technical Advisory Committee, on the State Water Resources Control Board's Technical Advisory Committee on Irrigated Agriculture, and on the State Water Conservation Coalition's Agriculture Conservation Task Force. He has recently assisted South African's Department of Water and Forestry Affairs in their development of a national agricultural water conservation program.

AGRICULTURAL

LLOYD FRYER is currently the Policy and Administration Manager for the Kern County Water Agency. He holds a B.S. in Biological Sciences with minors in Earth Sciences and Economics from California State College, Bakersfield. Since 1980, he has worked in the area of water resources planning, including computation of agricultural water demands, water use efficiencies, M&I demands, and groundwater recharge. He has authored or co-authored several publications related to agricultural water supply needs, water measurement, and economic strategies, and has provided technical expertise for the Kern County Water Agency in numerous negotiation and collaborative processes. Fryer is a member of the Agricultural Water Management Council, the American Society of Soil and Water Conservation, the ACWA Water Management Committee and the California Water Plan Advisory Committee.

ROGER REYNOLDS, of Summers Engineering, Inc., holds a B.S. in Civil Engineering from the University of California, Davis and is a registered Civil Engineer in the State of California. He has worked for 28 years as a consultant to numerous water agencies and agricultural interests in irrigation and drainage design. This work has primarily been in the Sacramento and San Joaquin Valleys. Reynolds was appointed to be a member of the AB 3616 Committee that developed the MOU on efficient water management practices and was elected Co-Chair of the Agricultural Water Management Council formed under that MOU. Reynolds is a member of the American Water Works Association, the U.S. Committee on Irrigation and Drainage, and the ACWA Groundwater and Water Management Committees.

MARC VAN CAMP holds a B.S. degree in Civil Engineering from California State University, Sacramento and is a registered civil engineer in California, Nevada and Oregon. Van Camp worked for the US Geological Survey from 1979 to 1984 in data collection which focused primarily on stream flow measurements. Since 1984, Van Camp has worked with numerous clients, primarily agricultural water agencies, on the Sacramento and San Joaquin River systems in the areas of water rights, water supply, and water use analysis. Van Camp has been involved in water transfer negotiation processes that include detailed evaluations of quantities of water available for transfer as a result of

water conservation, land fallowing, and groundwater substitution. Van Camp is also familiar with water quality issues in the Sacramento River system. Van Camp has been involved as a technical resource in recent negotiations and collaborative processes involving water rights settlements, including the San Joaquin River Agreement. Van Camp is also a member of the American Society of Civil Engineers and the U.S. Committee on Irrigation and Drainage.

ENVIRONMENTAL

DANA HAASZ is a Research Associate at the Pacific Institute for Studies in Development, Environment and Security. Haasz holds a B.Sc. in Geography and Environmental Sciences from McGill University and a Master's degree in Applied Geography from New Mexico State University, where her focus was landscape water conservation. Haasz started at the Institute by co-authoring an analysis of CALFED's Water Use Efficiency Technical Appendix and has since focused most of her work in the field of water use efficiency. She works with local agencies, state agencies, and environmental groups to promote water use efficiency and help design appropriate programs. Haasz is currently working to quantify the potential for demand management in California.

SPRECK ROSEKRANS is a Senior Analyst with Western Resources. Rosekrans models, analyzes and evaluates operations of electric utilities and water systems. He was an active (and vocal) member of the State Water Plan's Advisory Committee for the 1998 Bulletin and is again a committee member for the 2003 Bulletin. His work on the accounting of the 800,000 acre-feet of dedicated yield under the Central Valley Project Improvement Act Section 3406(b)(2) has helped to support implementation of the Anadromous Fish Restoration Program. Rosekrans is currently involved with several CALFED workgroups, including those related to economics, water quality and the operation of existing and newly proposed facilities. Rosekrans is Past-Convener of and actively involved in the broadly based Bay-Delta Modeling Forum. Rosekrans holds a B.A. in Mathematics from the University of California, San Diego.

LARRY FARWELL is an independent consultant working with the United States Bureau of Reclamation, California Department of Water Resources, South Africa /United States Binational Commission, and other national, regional and local water agencies. Mr. Farwell works to integrate demand management into water supply planning, promote a balance between regulatory and voluntary efficiency improvements, and improve community water conservation efforts. Between 1993 and 1996, Mr. Farwell assisted the U.S. Bureau of Reclamation with the implementation of the Central Valley Improvement Act and the development of agricultural and urban water conservation plans. He received a B.A. in Political Science from Occidental College, an M.A. in Educational Research from California State College, Dominguez Hills and will forever be a Ph.D. Candidate in Counseling Psychology at the University of California, Santa Barbara.

TECHNICAL TEAM BIOGRAPHIES

TOM GOHRING is Program Manager of the Water Use Efficiency element of the CALFED Bay-Delta Program, a cooperative effort among state and federal agencies and the public to ensure a healthy ecosystem, reliable water supplies, good quality water, and stable levees in California's Bay-Delta. Mr. Gohring earned his M.S. in Irrigation Engineering from U.C.

Davis and his B.S. in Agricultural Engineering from Cal Poly, San Luis Obispo. Prior to joining the CALFED team, he led several interdisciplinary water management and water use efficiency projects under the employ of large and small public and private entities including the U.S. Bureau of Reclamation, the Kings River Conservation District, and CH2M Hill, Inc.

LEE AXELRAD is an attorney with Resources Law Group, LLP. Mr. Axelrad's practice focuses on matters relating to natural resources, environmental, land use, and local government law, in both the administrative process and litigation and in conservation real estate transactions. Mr. Axelrad received his law degree from U.C. Berkeley's Boalt Hall School of Law and a master's degree in city and regional planning from U.C. Berkeley's College of Environmental Design.

SCOTT J. FEISTEL is an Assistant Water Resources Engineer at Provost & Pritchard Engineering Group, Inc. (P&P), a diverse civil engineering firm specializing in agricultural engineering. Mr. Feistel has a Bachelor of Science in Agricultural Engineering from California Polytechnic State University, San Luis Obispo. His professional endeavors include investigations, planning, evaluation, modeling, and design for irrigation districts, farms, the San Joaquin Area Flood Control Agency, U. S. Bureau of Reclamation, and the CALFED Bay-Delta Program.

KEVIN R. JOHANSEN is a Senior Water Resources Engineer at Provost & Pritchard Engineering Group, Inc. (P&P), a diverse civil engineering firm specializing in agricultural engineering. P&P is the district engineer or provides consulting engineering services for 25 water agencies in the San Joaquin Valley and provides district management services to four of those water districts. Mr. Johansen has an extensive background in investigations, planning, design, and administration of water distribution systems, water district management, water transfers, groundwater recharge facilities, and on-farm water management. Mr. Johansen earned his Bachelor of Science in Agricultural Engineering from Cal Poly, San Luis Obispo.

DAVID PURKEY is a founder and Principal Hydrologist with West World Water, a firm specializing in developing and applying innovative analytical tools in support of water management planning initiatives. He earned his Ph.D. and M.S. degrees from the University of California, Davis where he focused primarily on hydrologic processes in irrigated watersheds. His Bachelors Degree in Geology was awarded by Carleton College in Northfield, Minnesota. In recent months Dr. Purkey has focused his efforts on initiatives to promote groundwater banking in California and on efforts to account for the hydrologic and economic implications of environmental regulations on the Klamath Irrigation Project.

MARK ROBERSON is an Independent Consultant based in Sacramento, California. He has been under contract to the Water Use Efficiency element of CALFED for the past two years. He earned his Ph.D. in Soil and Water Sciences from the University of California. He has a M.S. in Agriculture from Cal Poly and a B.S. in Biochemistry from the University of California. He has extensive experience working at the district and farm level on innovative water management solutions.

ECONOMICS SUPPORT

JOSEPH C. McGAHAN is President of Summers Engineering, Inc. in Hanford, California. He holds a BS degree from California State Polytechnic University and an MS degree from

the California Institute of Technology. He is a registered Civil Engineer in the State of California. Mr. McGahan has spent over thirty years working in the field of water resources. His work has included, among other things, irrigation and drainage water quality studies and design of potable water treatment plants, including remedial work due to trace element problems. Since 1985, he has been a consultant to agricultural districts in the Grassland area dealing with water quality issues.

STAKEHOLDER SURVEY SUPPORT

GRANT G. DAVIDS is Principal Agricultural Engineer and President of Davids Engineering, Inc., a consulting firm that specializes in performing water resource studies for irrigation districts and other resource management agencies. Mr. Davids holds a Bachelor of Science Degree in Agricultural Engineering from California Polytechnic State University at San Luis Obispo. Mr. Davids has been actively involved in development of methodologies to measure water savings resulting from implementation of conservation programs. He serves on the three-member team of Conservation Verification Consultants responsible for verifying actual water conservation accomplished by the landmark water transfer from Imperial I.D. to the Metropolitan Water District of Southern California

DAVID W. MILLER is a Project Manager at Davids Engineering, Inc., a consulting firm that specializes in performing water resource studies for irrigation districts and other resource management agencies. Dr. Miller has a Bachelor of Arts in English Literature from the University of North Carolina, a Masters of Science in Irrigation Engineering from Utah State University and a Ph.D. in Biological and Agricultural Engineering from North Carolina State University. Dr. Miller's recent professional activities have focused on projects throughout California involving water conservation, water transfer and conjunctive management.

BRYAN P. THORESON is an Agricultural Engineer at Davids Engineering, Inc., a consulting firm that specializes in performing water resource studies for irrigation districts and other resource management agencies. Dr. Thoreson has a Bachelor and Masters of Science in Agricultural Engineering from South Dakota State University and a Ph.D. in Biosystems and Agricultural Engineering from the University of Arizona. Dr. Thoreson specializes in water information system development and irrigation water conservation, including data management, irrigation scheduling, improving on-farm application efficiencies, flow measurement, and irrigation/drainage system operations and maintenance.

FACILITATION TEAM BIOGRAPHIES

SCOTT T. McCREARY is Co-founder and Principal of CONCUR, Inc., a firm providing services in environmental policy analysis & strategic planning, agreement-focused facilitation, and negotiation training. Since its establishment in 1987, the firm has resolved over 30 complex environmental disputes across a wide range of water resource and other environmental issues. Dr. McCreary has facilitated CALFED Independent Review Panels on Agricultural Water Conservation Potential and the Ecosystem Restoration Program Plan. He earned his Ph.D. in Urban Studies and Planning and Conflict Resolution from MIT. He has a Masters of Landscape Architecture and Environmental Planning from the University of California, Berkeley, and a Bachelor of Arts in Biology and Environmental Planning from the University of California, Santa Cruz.

BENNETT BROOKS is a Senior Associate in the Berkeley office of CONCUR, Inc. He earned his M.P.P. from the Kennedy School of Government, Harvard University, and his B.A. in Political Science from Tufts University. At CONCUR, Mr. Brooks provides services in policy analysis, facilitation, and process design. Recent work includes facilitating CALFED-sponsored dialogues on water use efficiency and ecosystem restoration. He also co-facilitated CALFED's Independent Review Panel on Agricultural Water Conservation Potential. Prior to joining CONCUR, Mr. Brooks worked as a senior trade and economic development official with the Alaska State government. He also worked as a journalist in the U.S. and Asia.

ANN HOLMES is currently an intern at CONCUR. She is a Cornell University graduate with a BA in Biology, with a concentration in Ecology and Evolution. At CONCUR, she is currently doing research on global warming and climate change impacts to the San Francisco Bay Delta.

ATTACHMENT 3

To: Tom Gohring, Program Manager, Water Use Efficiency Program
From: Members, Independent Review Panel on Ag WUE Appropriate Measurement
Date: January 28, 2002
Re: Summary Report – October 30 Independent Review Panel Follow-On Caucus

Immediately following the public forum of the Interim Meeting of the Independent Review Panel on Appropriate Measurement on October 29 – 30, 2001, the Panel members (except John Replogle who needed to depart earlier to catch a flight) met for about an hour and a half over lunch. We were upbeat about the potential outcome of the Independent Panel Review process and felt that as senior professionals our collective insights could be quite useful to the Review Management Team. This should be especially important in terms of the set of purposes and their alternatives selected for driving the proposed “appropriate measurement straw-man.” During the luncheon meeting we discussed and consulted on these scooping issues and other related matters. It was the sense of Panel that a report of our collective insights should be drafted, then reviewed by all members and forwarded to the Management Team.

Following are our insights. These are our collective impressions at this juncture and are not intended to prejudge or limit the Technical Team’s work or the Panel’s eventual recommendations. We hope they will provide useful guidance for your Management Team and the Technical Team’s ongoing work efforts in preparation for the next Review Panel Meeting.

1. Continue with the general approach summarized in the matrix presented as Figure 1 and detailed in Table 1 of the Approach to Developing Alternatives. However, we would like to narrow the alternatives down to “less than three for each “Purpose”, and to only one wherever the Technical Team feel that would be appropriate.
2. Develop the “ straw-man” based on the following three purposes: Water Transfers based on either “conservation savings” or “land use changes”; State/Federal Water Allocation; and State/Federal Water Resources Planning¹.
 - a. It is interesting to note that Water Transfers represent a particular facet of State/Federal Water Allocation between uses and/or users and both are State/Federal issues. This is especially true in a fully appropriated basin where water transfers and allocation changes involve highly charged property rights issues. Thus appropriate estimation or measurement in both cases is of particular importance not only to the directly affected parties but also to all potentially affected “third parties.” Furthermore, accurate estimates of evaporative depletions, surface water diversions, and groundwater use over a reasonable

¹ Other purposes related to water suppliers and water users – while important – were not considered to be an appropriate driver for possible legislation. These reasons are described in greater detail elsewhere in this memorandum. This does not eliminate consideration at the district/supplier or farm levels nor mean that they cannot benefit from measurement programs. It simply means that “what may be good” for suppliers and growers would not be necessarily be the driver for our recommendations.

- period of time (5 to 7 years) may be necessary in order to equitably manage transfers and other water allocation decisions.
- b. For Water Resource Planning at the State/Federal levels, a more global (less accurate) approach for estimating both surface and groundwater usage is probably adequate.
 - c. The water measurement data needs (in terms of flow paths and measurement accuracy) for defining CALFED's Ag WUE Quantifiable Objectives and other CALFED Program objectives might be a reasonable surrogate for the State in general.
3. Following are some of the main reasons we suggest mainly focusing on the above three purposes when drafting the "straw-man document":
- a. In the case of State/Federal Water Flow Management and Deliveries, i.e. water operations, we assume that the responsible agencies already have the necessary water measurement and control facilities for the task at hand. If not it is the their responsibility to determine what is needed and find the necessary funding. Furthermore, for managing flows real time data is necessary and storing and recording such data is not essential to the operational purposes.
 - b. Water suppliers and water users have the same three levels of purposes as the State/Federal agencies, planning, transfer/allocation, and operations. We believe that good water measurement enhances the ability to plan, allocate and operate irrigation water supply and application systems to increase water use efficiency. However, we do not recommend focusing on legislated regulations prescribing which flow paths and to what accuracy agricultural water suppliers and users must measure water for the purpose of optimizing their own internal use. Such decisions are best left up to the suppliers and users and be driven by their internal requirements and authority to:
 - use water beneficially, and
 - deal with internal conjunctive use issues;and the necessity to:
 - live within their water rights,
 - meet discharge water quantity and quality requirements, and
 - have sufficient data on hand to satisfy State/Federal requirements if they wish to market or otherwise transfer water.
 - c. While we do not recommend focusing on the purposes covered in Items a and b, we do feel it is worth developing sufficient general purpose and intensity of measurement information for them. Such information should be useful to demonstrate that the required water measurement criteria for State/Federal level water transfers, allocation, and planning also provide auxiliary local benefits.
4. We discussed the observation that groundwater hydrology needs to be evaluated from a regional or sub-regional (or district) perspective and that the existing structure of local groundwater management might work. Potentially, local districts might be able to implement appropriate measurement possibly with state oversight but without the need

for a state agency's control². Following are some of the other concepts related to groundwater extraction estimates or measurements we discussed, but there was not consensus on every item:

- a. The idea of linking groundwater extraction measurement criteria to the kinds of water transfer and banking programs a district or its region might want to participate in or develop.
 - b. The observation that it is reasonable to require a relatively high level of accuracy³ in the measurement of groundwater extractions for any water transfer or banking program that could result in significant third-party impacts.
 - c. The need to be careful not to recommend a groundwater measurement program that becomes a threat or disincentive to developing otherwise desirable water transfer or banking programs.
 - d. The realization that accurate groundwater extraction and groundwater level measurement at the regional or sub-regional level will become an increasingly critical issue in dealing with Water Transfers and other State/Federal Water Allocation issues. Furthermore, reliable and accessible information on the status of groundwater resources and storage changes will become more and more important for State/Federal Water Resources Planning purposes. This is especially true in view of the role conjunctive use plays and the increasing dependence on groundwater banking.
5. We discussed the possibility that State/Federal agencies do not have sufficient numbers of stream gauging stations and water quality measurements. Along with any legislature actions related to appropriate water measurement for allocation and planning purposes, attention should also be given to intensification of the network of stream and river gauging and water quality assessment locations. The same may be said for improving the state's groundwater level monitoring network and for improving upon the current knowledge of the hydrogeologic properties of the state's aquifers.
6. In support of the focus on State/Federal transfers, allocation, and planning, the stakeholder survey should be extended to agencies that would be relying on the measurement data. In addition to DWR, the State Board, the BOR, Corps of Engineers, and Fish and Wildlife agencies, etc., it would be logical to interview the other CALFED Program managers, and perhaps urban water resource planners such as MWD and East Bay MUD.
7. We discussed thinking in terms of considering the purpose and reasonableness of water measurement objective functions as being on a 10- to 15-year horizon. In the not so

² Currently, there are adjudicated groundwater basins, groundwater management plans based on AB 255 and AB 3030, and areas of no organized groundwater management plan. It would seem that, notwithstanding adjudicated groundwater basins, groundwater management might be able to be locally governed within basins or sub-basins as defined in DWR Bulletin 118.

³ For example, a discharge measurement accuracy of perhaps $\pm xx\%$ for wells over some given discharge rate or volume, i.e. xx gpm or xx AF/year, by whatever means is most practical and cost effective. This is just one example of the type of approaches the Panel may wish to consider in its subsequent deliberations.

distant future, relatively long-term and accurate measurements defining the State's water resources and their usage will be invaluable for making informed State/Federal allocation and planning decisions. Such information will become more and more important as the demands for water increase, and if collecting it is not begun fairly soon informed allocation and planning decisions will not be possible.

8. We discussed and agreed on the importance of working with local organizations to the fullest extent possible, and developing regional organizations for implementing water measurement and planning programs wherever needed (perhaps modeled along the lines of AB3030).
9. We discussed the concept of differentiating between "incentives" and "cost sharing" as only being one type of incentive. For example, other types of incentives might be tax relief, low interest loans, relief from specific regulatory requirements, etc.
10. Some rough information on the existing state of water measurement (or baseline information) related to the State/Federal allocation and planning purposes would be very useful for our deliberations. This is important when estimating the added cost in response to achieve the desired "appropriate water measurement" level. Doing this may be relatively easy in view of the observation that, for the most part, groundwater extractions are not measured and farm deliveries are not accessible. Thus, this mainly leaves the following: developing information on the current measurement status of surface water flows and deliveries; water table monitoring; estimation of basin groundwater extractions through indirect methods (e.g., DWR Bulletin 113 and Bulletin 118); and other more general water resources inventory information.
11. Cost and implementation should be evaluated for each of the three alternatives, i.e., water transfers, water allocation and water resources planning.

ATTACHMENT 4

Attached is a copy of the agenda used for the October 29-30, 2001, Interim Meeting of the Independent Review Panel on Appropriate Measurement.

SECTION I: General Meeting Materials
INTERIM MEETING
INDEPENDENT REVIEW PANEL ON
APPROPRIATE MEASUREMENT
West Ballroom, Sterling Hotel, Sacramento
October 29-30, 2001

AGENDA – DAY ONE

- | | | |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 9:30 | Welcome and Introductions
General Welcome/Agenda Review
Panel/Technical Advisors Introductions
Meeting Procedures/Ground Rules |
Scott McCreary, CONCUR
Scott McCreary
Scott McCreary |
| 9:50 | Overview
CALFED Bay-Delta Program
Water Use Efficiency Program
Independent Review Panel |
Tom Gohring, CALFED
Tom Gohring
Tom Gohring |
| 10:30 | Break | |
| 10:45 | Panel Question One: Framework
Context/Background
Panel Comment
Technical Advisors/Public Comment
Synthesis |
Tom Gohring/Technical Team
Panel Members
Stakeholders/General Public
Scott McCreary/Bennett Brooks |
| 12:30 | Lunch | |
| 1:30 | Panel Question Two: Alternatives Development
Context/Background
Panel Comment
Technical Advisors/Public Comment
Synthesis |
Tom Gohring/Technical Team
Panel Members
Stakeholders/General Public
Scott McCreary/Bennett Brooks |
| 3:15 | Break | |
| 3:30 | Panel Question Three: Analysis Prototype
Context/Background
Panel Comment
Technical Advisors/Public Comment
Synthesis |
Tom Gohring/Technical Team
Panel Members
Stakeholders/General Public
Scott McCreary/Bennett Brooks |
| 5:00 | Wrap-Up
Synthesis
Review of Day Two Agenda |
Tom Gohring/Scott McCreary
Scott McCreary |
| 5:15 | Adjourn | |

Please see the attached page for a detailed description of the questions being posed for deliberation by the Independent Review Panel on Appropriate Measurement.

Technical Team members are: Mark Roberson, CALFED consultant; Scott McCreary, Bennett Brooks and Ann Holmes, CONCUR; David Mitchell, M-Cubed; Kevin Johansen and Scott Feistel, Provost & Pritchard Engineering Group; Lee Axelrad, Resources Law Group; and David Purkey, West World Water. Joe McGahan with Summers Engineering provided additional economics support. Grant Davids, Dave Miller and Bryan Thoreson, all with Davids Engineering, provided additional support on stakeholder surveys.

DRAFT AGENDA – DAY TWO

10:00 Welcome and Introductions

General Welcome
Observations from Day One
Agenda Review

*Scott McCreary, CONCUR
Tom Gohring, CALFED
Scott McCreary*

10:15 Panel Question Four: Distinguishing Characteristics

Context/Background
Panel Comment
Technical Advisors/Public Comment
Synthesis

*Tom Gohring/Technical Team
Panel Members
Stakeholders/General Public
Scott McCreary/Bennett Brooks*

11:15 Break

11:30 Panel Question Five: Preparation Needs for Next Panel Deliberations

Context/Background
Panel Comment
Technical Advisors/Public Comment
Synthesis

*Tom Gohring/Technical Team
Panel Members
Stakeholders/General Public
Scott McCreary/Bennett Brooks*

12:45 Wrap-Up

Synthesis
Next Steps

*Scott McCreary
Tom Gohring*

1:00 Adjourn

SECTION I

INTERIM MEETING INDEPENDENT REVIEW PANEL ON APPROPRIATE MEASUREMENT West Ballroom, Sterling Hotel, Sacramento October 29-30, 2001

Questions for Panel Deliberations

The CALFED Bay-Delta Program is convening an Independent Review Panel on Appropriate Measurement, consisting of six nationally recognized experts from several disciplines who will assist CALFED in formulating a definition of appropriate measurement of water use. The questions below will be used to guide the Panel's October 29-30, 2001, deliberations.

Question One: The Technical Team has put forward a suggested **framework** for formulating a consensus definition of appropriate measurement of agricultural water use. Please consider the following:

- Is the proposed framework an effective way to structure these deliberations?
- Are the individual elements of the framework – purposes, critical considerations, measurement options and screening criteria – appropriate?
- How might the framework be revised to ensure the Panel's deliberations are as credible and comprehensive as possible?

Question Two: The Technical Team has put forward several **options** for addressing the various purposes of agricultural water measurement. Please comment on the following:

- Are the **alternatives** – low, medium and high – constructive ways to organize the various measurement options?
- Do they reasonably bracket the range of alternatives? Are there other packages the Panel should be considering?
- Is additional information needed to inform the Panel's deliberations on this topic?

Question Three: The Technical Team has put forward a proposed **“prototype” strategy** for analyzing the various measurement alternatives. Please comment on the following:

- Does the prototype analysis provide a useful format for evaluating each alternative?
- Is the analytic format comprehensive?
- Is additional information needed to inform the Panel's deliberations?

Question Four:

Past Panel deliberations have emphasized the need to account for **distinguishing local characteristics** – supplier size, cost of water, availability of water, mix of water supply sources, geography, etc. – when crafting a definition of appropriate measurement. Please comment on the following:

- What are the most salient characteristics that should be considered?
- How can the Panel best take account of these salient characteristics when developing a definition of appropriate measurement?
- What additional information does the Panel need to address and resolve this issue?

Question Five:

What **additional preparations** are needed to support the Panel's follow-on deliberations early next year? In particular:

- Does the proposed framework need to be revised?
- What type of definition of appropriate measurement does the Panel believe it can formulate?
- What additional data collection and research is required to support the Panel's deliberations on this topic?

ATTACHMENT 5

Development of a Definition of Appropriate Measurement for All Water Uses Overall Process and Associated Timeline

Step	Description	Panel Linkage	Sector Focus	Proposed Timeline	Public Input
1	Develop/Discuss Draft Process Overview/Work <ul style="list-style-type: none"> CALFED Water Use Efficiency ("WUE") staff/consultants meet with panelists, via teleconference, to review draft process overview and work plan outline proposed to guide remaining technical work. Key elements include: <ul style="list-style-type: none"> Conducting additional stakeholder surveys Preparing draft finding summarizing CA's existing conditions and need (related to three primary objectives) Outlining rough characteristic of current baseline of on-farm/district measurement Refining groundwater definitions Developing alternative packages Refining measurement cost estimates Evaluating alternative packages 	Panelists review draft outline (via teleconference)	Ag only	January 2002	
2	Additional Stakeholder Group Outreach <ul style="list-style-type: none"> CALFED WUE staff develops stakeholder group outreach list, working with Ad Hoc Work Group and others. CALFED WUE staff briefs interested stakeholder groups/agencies on progress to-date and next steps. 	No formal Panel role envisioned	Ag only	January-February	
3	Carry Out Remaining Technical Work <ul style="list-style-type: none"> CALFED WUE staff/consultants carry out work plan 	No formal Panel role envisioned	Ag only	January-March	
4	Review/Refine Draft Findings Regarding the Factual and Technical Background to Agricultural Water Use Measurement in California <ul style="list-style-type: none"> CALFED WUE staff seeks informal review and suggestions on draft findings from Technical Advisors, Ad Hoc Work Group, WUE-PAC members. CALFED WUE staff incorporates suggested changes, as appropriate, and meet via teleconference with interested panelists to solicit additional comments on/suggested revisions to Draft Findings 	Interested panelists review Draft Findings (via teleconference)	Ag only	Early March Mid-March	
5	Review/Refine Draft Alternatives <ul style="list-style-type: none"> CALFED WUE staff seeks informal review and suggestions on draft alternatives from Technical Advisors, Ad Hoc Work Group, WUE-PAC members. CALFED WUE staff incorporates suggested changes, as appropriate, and meet via teleconference with all panelists to solicit additional comments on/suggested revisions to Draft Alternatives. Panel may opt to hold follow-on caucus. CALFED WUE staff briefs relevant CALFED review bodies – i.e., WUE-PAC, BD-PAC, Management/Policy Group – on Panel progress-to-date. 	All panelists review Draft Alternatives (via teleconference); detailed review of technical background optional	Ag only	Early April Late April Late April	

Step	Description	Panel Linkage	Sector Focus	Proposed Timeline	Public Input
6	Conduct Structured Public Workshops <ul style="list-style-type: none"> CALFED WUE staff develops public notice mailing list (anticipated to be general CALFED mailing list supplemented with additional addressees) of individuals who may be particularly interested in measurement). CALFED WUE staff holds structured public workshops throughout the state to present and solicit feedback on the proposed Draft Findings and Alternatives. 	No formal Panel role; panelists welcome to attend if interested	Ag only	Mid-May	
7	Finalize and Distribute Written Materials for Panel Deliberations <ul style="list-style-type: none"> CALFED WUE staff compiles written materials for panel deliberations, including Draft Findings and Alternatives, revised to incorporate comments received during public workshops.. CALFED WUE staff distributes materials for Panel deliberations to panelists, technical advisors and interested stakeholders in advance of Panel's final deliberations. (Notice will be mailed to public notice mailing list, including details for panel meeting and address of web site containing posted written materials for panel deliberations.) 	No formal Panel role envisioned; teleconference may be held with interested panelists	Ag only	Mid-June	
8	Additional Stakeholder Group Outreach <ul style="list-style-type: none"> CALFED WUE staff briefs interested stakeholder groups/agencies to encourage attendance at upcoming Panel deliberations. CALFED solicits involvement of interested legislative representatives. 	No formal Panel role envisioned	Ag only	Mid-June to Mid-July	
9	Conduct Final Panel Deliberations <ul style="list-style-type: none"> Panel meets in public to deliberate on, review and revise, as necessary, draft findings and alternatives and make recommendations to WUE staff. Panel, at its discretion, may opt to combine alternatives into a comprehensive recommendation. Panel may opt to caucus during part of its deliberations. 	Panelists meet in Sacramento for in-person deliberations	Ag only	Mid-July	
10	Prepare Final Panel Report <ul style="list-style-type: none"> CALFED WUE staff prepares Draft Panel Report. Panelists review, revise and confirm Final Report. 	Panel reviews and comments on report	Ag only	Early August	
11	Additional Stakeholder Group Outreach <ul style="list-style-type: none"> Final Report – with Panel edits incorporated – distributed to affected stakeholder communities WUE-PAC seeks written comments from interested stakeholders indicating whether they “support,” “conditionally support” or “oppose” the Panel’s recommendations. 	No formal role envisioned for Panel	Ag only	Early August	

Step	Description	Panel Linkage	Sector Focus	Proposed Timeline	Public Input
12	Flesh Out/Fold In Urban/Managed Wetlands Elements of Definition <ul style="list-style-type: none"> CALFED WUE staff uses a yet-to-be-defined process to articulate appropriate measurement as it relates to urban/managed wetlands. 	<p>No formal role envisioned for Panel</p> <p>Panelists may be asked to offer their perspectives on the draft definition in various settings (i.e., WUE PAC, Policy Group)</p>	Urban and Managed Wetlands	May-August	
13	Prepare Draft Definition <ul style="list-style-type: none"> CALFED WUE staff prepares draft definition of appropriate measurement that encompasses ag, urban and managed wetlands components. Staff will highlight where and why its draft definition deviates from Panel recommendations. 		Ag, Urban and Managed Wetlands	August-Sept.	
14	Present Draft Definition to CALFED Review Bodies <ul style="list-style-type: none"> CALFED WUE staff presents draft definition to WUE-PAC, BD-PAC, CALFED Management Group and other CALFED bodies for any suggested revisions prior to structured public workshops. 		Ag, Urban and Managed Wetlands	Fall 2002	
15	Additional Structured Public Workshops <ul style="list-style-type: none"> CALFED WUE staff holds public workshops throughout state to solicit feedback to draft definition. WUE staff uses public comments, as appropriate to revise draft definition. 		Ag, Urban and Managed Wetlands	Fall 2002	
16	Present Revised Draft Definition to CALFED Policy Group <ul style="list-style-type: none"> CALFED WUE staff presents revised draft definition to WUE-PAC, BD-PAC CALFED Policy Group Policy Group determines efficacy of and strategy for working with executive and/or legislative reps to draft and introduce state legislation. 		Ag, Urban and Managed Wetlands	Fall 2002	
17	Begin Legislative Drafting (contingent on Policy Group direction) <ul style="list-style-type: none"> Based on Policy Group direction (see Step 16) and legislative concurrence, CALFED will work with legislative representatives to help draft legislation consistent with the appropriate measurement definition developed through this process. 		Ag, Urban and Managed Wetlands	Late 2002	